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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,274	07/08/2003	Dieter Maisch	P7107.8US	1273
30008	7590	02/23/2005	EXAMINER	
GUDRUN E. HUCKETT DRAUDT LONSSTR. 53 WUPPERTAL, 42289 GERMANY			TRAN, BINH Q	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/604,274	Applicant(s) MAISCH, DIETER	
	Examiner BINH Q. TRAN	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8, 15-17, 19 and 21-26 is/are rejected.
- 7) ☒ Claim(s) 5-7, 9-14, 18, 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 8, 15-17, 19, and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (Patent Number 6,526,746) in view of Otome et al. (Otome) (Patent Number 6,146,102).

Regarding claim 1, Wu discloses a device for exhaust gas after treatment of motor vehicles, the device comprising: at least one pump device (e.g. 7, 407, 607) for supplying a solution to an exhaust gas manifold of a motor vehicle; wherein the pump device (e.g. 7, 407, 607) is a metering pump having at least one connecting part (e.g. 31, 164, 418); wherein the at least one connecting part (e.g. 31, 164, 418) opens into the exhaust gas manifold (37); wherein the at least one pump device (e.g. 7, 407, 607) comprises at least one piston (e.g. 92, 618) (e.g. See cols. 4-5, lines 1-67). However, Hoffmann fails to disclose that the at least one pump device comprises a piezo element configured to actuate the at least one piston.

Otome teaches that it is conventional in the art, to use a pump device (90) comprises a piezo element (124) configured to actuate the at least one piston (e.g. See col. 5, lines 1-67).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to use a pump device comprises a piezo element configured to actuate the at

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least one piston of Hoffmann, as taught by Otome for the purpose of supply additional fuel into the exhaust gas to change the air-fuel ratio of the exhaust gas flowing into the absorbent to promote the combustion of the exhaust gas, so as to control the temperature of the emission device within the light-off temperature range, and to reduce amount of nitrogen oxides in the exhaust gas of the lean-burn engine, and further improve the performance of the engine and the efficiency of the emission device.

Regarding claim 2, Wu further discloses that the at least one connecting part (e.g. 31, 164, 418) is tubular (e.g. See Figs. 1-10).

Regarding claim 3, Wu further discloses that the at least one pump device (e.g. 7, 407, 607) has a housing (See Figs. 1-10) provided with a housing chamber (See Figs. 1-10), wherein the at least one connecting part is arranged in the housing chamber of the housing (See Figs. 1-10), wherein the housing chamber is provided preferably at an end face of the housing (e.g. See Figs. 1-10; cols. 4-5, lines 1-67).

Regarding claim 8, Otome further discloses that the at least one pump device has a transmission element connected to the piston and the piezo element (4).

Regarding claim 15, Otome further discloses that the piezo element (124) moves the piston against a counterforce (e.g. See col. 5, lines 1-67).

Regarding claim 16, Wu further discloses that the housing of the at least one pump device has a supply line and wherein the piston sucks in the solution from the supply line (e.g. See Figs. 1-10; cols. 4-5, lines 1-67).

Regarding claim 17, Wu further discloses that the at least one pump device (3) has a second check valve configured to close the supply line (e.g. See Figs. 1-10; cols. 4-5, lines 1-67).

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Regarding claim 19, Wu further discloses that the second check valve opens the supply line in a direction toward the pressure chamber as a result of a suction force caused by a return movement of the piston (e.g. See Figs. 1-10; cols. 4-5, lines 1-67).

Regarding claim 21, Otome further discloses that the an electronic actuating device (90) for actuating the piezo element (124) (e.g. See col. 5, lines 1-67).

Regarding claim 22, Otome further discloses that the electronic actuating device is arranged in the housing of the pump device (e.g. See col. 5, lines 1-67).

Regarding claim 23, Wu further discloses that the piezo element and the electronic actuating device are provided on opposed sides of the piston (e.g. See col. 5, lines 1-67).

Regarding claim 24, Wu further discloses that the electronic actuating device is arranged outside of the housing (e.g. See col. 5, lines 1-67).

Regarding claim 25, Wu further discloses that the housing has an electronic connector (e.g. See col. 5, lines 1-67).

Regarding claim 26, Wu further discloses that the housing has a mounting flange (e.g. See col. 5, lines 1-67).

Claims 1-4, 8, 15-17, 19, and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weigl et al. (Weigl) (Patent Number 6,513,323) in view of Otome et al. (Otome) (Patent Number 6,146,102).

Regarding claims 1, Weigl discloses a device for exhaust gas after treatment of motor vehicles, the device comprising: at least one pump device (15) for supplying a solution to an exhaust gas manifold of a motor vehicle; wherein the pump device (15) is a metering pump having at least one connecting part (153); wherein the at least one connecting part (153) opens

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into the exhaust gas manifold (41); wherein the at least one pump device (15) comprises at least one piston (e.g. See Figs. 1-2; col. 4, lines 567; col. 5, lines 1-45). However, Weigl fails to disclose that the at least one pump device comprises a piezo element configured to actuate the at least one piston.

Otome teaches that it is conventional in the art, to use a pump device (90) comprises a piezo element (124) configured to actuate the at least one piston (e.g. See col. 5, lines 1-67).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to use a pump device comprises a piezo element configured to actuate the at least one piston of Weigl, as taught by Otome for the purpose of supply additional fuel into the exhaust gas to change the air-fuel ratio of the exhaust gas flowing into the absorbent to promote the combustion of the exhaust gas, so as to control the temperature of the emission device within the light-off temperature range, and to reduce amount of nitrogen oxides in the exhaust gas of the lean-burn engine, and further improve the performance of the engine and the efficiency of the emission device.

Regarding claim 2, Weigl further discloses that the at least one connecting part (e.g. 153) is tubular (e.g. See Figs. 1-2; col. 4, lines 567; col. 5, lines 1-45)

Regarding claim 3, Weigl further discloses that the at least one pump device has a housing provided with a housing chamber, wherein the at least one connecting part is arranged in the housing chamber of the housing, wherein the housing chamber is provided preferably at an end face of the housing (e.g. See Figs. 1-2; col. 4, lines 567; col. 5, lines 1-45)

Regarding claim 4, Weigl further discloses that the at least one connecting part has a terminal collar (19) and wherein the terminal collar is secured in the housing chamber (e.g. See Figs. 1-2; col. 4, lines 567; col. 5, lines 1-45).

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Regarding claim 8, Otome further discloses that the at least one pump device has a transmission element connected to the piston and the piezo element (4).

Regarding claim 15, Otome further discloses that the piezo element (124) moves the piston against a counterforce (e.g. See col. 5, lines 1-67).

Regarding claim 16, Weigl further discloses that the housing of the at least one pump device has a supply line and wherein the piston sucks in the solution from the supply line (e.g. See Figs. 1-2; col. 4, lines 567; col. 5, lines 1-45)

Regarding claim 17, Weigl further discloses that the at least one pump device (3) has a second check valve configured to close the supply line (e.g. See Figs. 1-2; col. 4, lines 567; col. 5, lines 1-45).

Regarding claim 19, Weigl further discloses that the second check valve opens the supply line in a direction toward the pressure chamber as a result of a suction force caused by a return movement of the piston (e.g. See Figs. 1-2; col. 4, lines 567; col. 5, lines 1-45).

Regarding claim 21, Otome further discloses that the an electronic actuating device (90) for actuating the piezo element (124) (e.g. See col. 5, lines 1-67).

Regarding claim 22, Otome further discloses that the electronic actuating device is arranged in the housing of the pump device (e.g. See col. 5, lines 1-67).

Regarding claim 23, Otome further discloses that the piezo element and the electronic actuating device are provided on opposed sides of the piston (e.g. See col. 5, lines 1-67).

Regarding claim 24, Otome further discloses that the electronic actuating device is arranged outside of the housing (e.g. See col. 5, lines 1-67).

Regarding claims 25, Otome further discloses that the housing has an electronic connector (e.g. See col. 5, lines 1-67).

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Regarding claim 26, Weigl further discloses that the housing has a mounting flange (e.g. See Figs. 1-2; col. 4, lines 567; col. 5, lines 1-45).

Allowable Subject Matter

Claims 5-7, 9-14, 18, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Since allowable subject matter has been indicated, applicant is encouraged to submit formal drawings in response to this Office action. The early submission of formal drawings will permit the Office to review the drawings for acceptability and to resolve any informalities remaining therein before the application is passed to issue. This will avoid possible delays in the issue process.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of six patents:

Hoffmann et al. (Pat. No. 6539708), Lane et al. (Pat. No. 5522218), Sasaki et al. (Pat. No. 4955339), Lane et al. (Pat. No. 5787708), Nozawa et al. (Pat. No. 6032652), and McAlister (Pat. No. 5394852) all discloses an exhaust gas purification for use with an internal combustion engine.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
February 21, 2005



Binh Q. Tran
Patent Examiner
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